WHAT IS CLAIMED IS:

1. An optical pickup apparatus capable of compensating for thickness deviation of a high-density optical recording medium, the optical pickup apparatus recording or reproducing data from the optical recording medium that has a signal recording surface on a substrate, comprising:

a light source generating and emitting light beams;

a collimator lens collimating the emitted light beams from the light source into collimated beams;

a beamsplitter enabling a part of the collimated beams to pass therethrough;

an objective lens system, placed on an optical path between the beamsplitter and the optical recording medium, focusing the collimated beams from the beamsplitter, the objective lens system comprising a solid immersion lens which has a planar surface facing the substrate of the optical recording medium;

a light-receiving module receiving the light beam reflected from the optical recording medium and converting it into electric signal;

a focus control unit generating a focus control signal for focus control, in response to the electric signal from the light-receiving module; and

a position adjustment unit, connected to the light source or the collimated lens, making the light source or the collimated lens shift in response to the focus control signal generated from the focus control unit.

2. An optical pickup apparatus as recited in claim 1, wherein the objective lens system further comprises a condenser objective lens.

3. An optical pickup apparatus as recited in claim 1, wherein the distance between the collimated lens and the light source is changed by an amount L satisfying the following:

$$L \sim (f1/f2)^2 \times (\Delta d / n)$$

where Δd represents the deviation in the optical thickness of the substrate of the optical recording medium;

n represents a refractive index of the substrate; and

f1 and f2 represent focal lengths of the collimated lens and the objective lens system, respectively.

4. An optical pickup apparatus as recited in claim 1, wherein the light source

is a laser diode.

5. An optical pickup apparatus as recited in claim 1, wherein the focus control unit detects focus errors by a detection method that is selected from beam size detection, astigmatism detection, knife-edge detection, and hologram-Foucault detection.

6. An optical pickup apparatus as recited in claim 1, further comprising:

an air gap control unit for maintaining a distance between the solid immersion lens and the optical recording medium.

7. An optical pickup apparatus capable of compensating for thickness deviation of a high-density optical recording medium, the optical pickup apparatus recording or reproducing data from the optical recording medium that has a signal recording surface on a substrate, comprising:

a light source generating and emitting light beams;

a beamsplitter enabling a part of the emitted light beams to pass therethrough;

an objective lens system, placed on an optical path between the beamsplitter and the optical recording medium, focusing the light beams from the beamsplitter, the objective lens system comprising a solid immersion lens which has a planar surface facing the substrate of the optical recording medium;

a light-receiving module receiving the light beam reflected from the optical recording medium and converting it into electrical signals;

a focus control unit generating a focus control signal for focus control, in response to the electric signal from the light-receiving module; and

a position adjustment unit, connected to the light source, making the light source shift in response to the focus control signal generated from the focus control unit.

8. An optical pickup apparatus as recited in claim 7, wherein the objective lens system further comprises a condenser objective lens.

9. An optical pickup apparatus as recited in claim 7, wherein the position of the light source is changed by an amount L2 satisfying the following:

$$L2 \sim (s1/s2)^2 \times (\Delta d / n)$$

where Δd represents the deviation in the optical thickness of the substrate of the optical recording medium;

n represents a refractive index of the substrate;

s1 represents an optical path length between the light source and the solid immersion lens; and

s2 represents an optical path length between the solid immersion lens and the optical recording medium.

10. An optical pickup apparatus as recited in claim 7, wherein the light source is a laser diode.

11. An optical pickup apparatus as recited in claim 7, wherein the focus control unit detects focus errors by a detection method which is selected from beam size detection, astigmatism detection, knife-edge detection, and hologram-Foucault detection.

12. An optical pickup apparatus as recited in claim 7, further comprising:

an air gap control unit for maintaining a distance between the solid immersion lens and the optical recording medium.

13. An optical pickup apparatus as recited in claim 7, further comprising:

a coupling lens, placed between the light source and the beamsplitter, enabling optical power of the objective lens system to be distributed,

wherein the position adjustment unit is connected to the coupling lens.